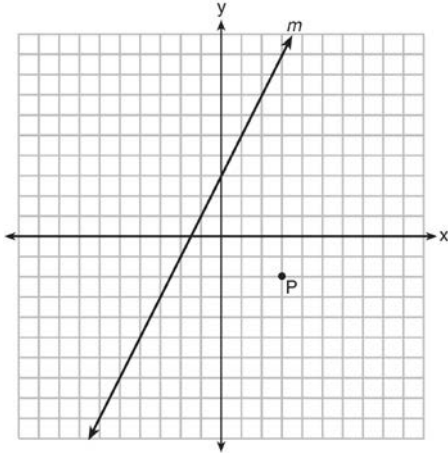


**G.GPE.B.5: Parallel and Perpendicular Lines 3a**

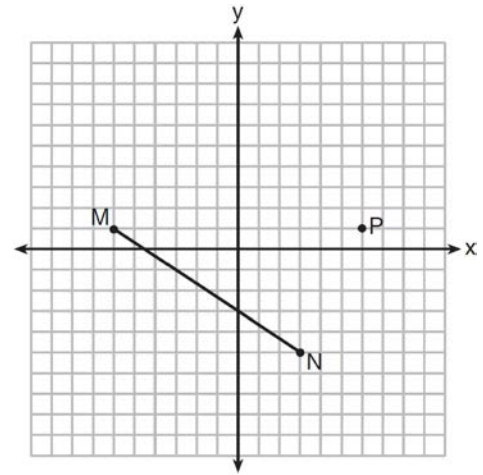
- 1 Line  $m$  and point  $P$  are shown in the graph below.



Which equation represents the line passing through  $P$  and parallel to line  $m$ ?

- 1)  $y - 3 = 2(x + 2)$
- 2)  $y + 2 = 2(x - 3)$
- 3)  $y - 3 = -\frac{1}{2}(x + 2)$
- 4)  $y + 2 = -\frac{1}{2}(x - 3)$

- 2 Given  $\overline{MN}$  shown below, with  $M(-6, 1)$  and  $N(3, -5)$ , what is an equation of the line that passes through point  $P(6, 1)$  and is parallel to  $\overline{MN}$ ?



- 1)  $y = -\frac{2}{3}x + 5$
- 2)  $y = -\frac{2}{3}x - 3$
- 3)  $y = \frac{3}{2}x + 7$
- 4)  $y = \frac{3}{2}x - 8$

- 3 What is the equation of a line passing through  $(2, -1)$  and parallel to the line represented by the equation  $y = 2x + 1$ ?

- 1)  $y = -\frac{1}{2}x$
- 2)  $y = -\frac{1}{2}x + 1$
- 3)  $y = 2x - 5$
- 4)  $y = 2x - 1$

- 4 What is an equation of the line that passes through the point  $(-2, 3)$  and is parallel to the line whose equation is  $y = \frac{3}{2}x - 4$ ?
- 1)  $y = \frac{-2}{3}x$
  - 2)  $y = \frac{-2}{3}x + \frac{5}{3}$
  - 3)  $y = \frac{3}{2}x$
  - 4)  $y = \frac{3}{2}x + 6$
- 5 Which equation represents a line that is parallel to the line whose equation is  $y = \frac{3}{2}x - 3$  and passes through the point  $(1, 2)$ ?
- 1)  $y = \frac{3}{2}x + \frac{1}{2}$
  - 2)  $y = \frac{2}{3}x + \frac{4}{3}$
  - 3)  $y = \frac{3}{2}x - 2$
  - 4)  $y = -\frac{2}{3}x + \frac{8}{3}$
- 6 Which equation represents the line that passes through the point  $(-2, 2)$  and is parallel to  $y = \frac{1}{2}x + 8$ ?
- 1)  $y = \frac{1}{2}x$
  - 2)  $y = -2x - 3$
  - 3)  $y = \frac{1}{2}x + 3$
  - 4)  $y = -2x + 3$
- 7 What is an equation of the line that passes through the point  $(4, 5)$  and is parallel to the line whose equation is  $y = \frac{2}{3}x - 4$ ?
- 1)  $2y + 3x = 11$
  - 2)  $2y + 3x = 22$
  - 3)  $3y - 2x = 2$
  - 4)  $3y - 2x = 7$
- 8 What is an equation of the line that passes through the point  $(-2, 1)$  and is parallel to the line whose equation is  $4x - 2y = 8$ ?
- 1)  $y = \frac{1}{2}x + 2$
  - 2)  $y = \frac{1}{2}x - 2$
  - 3)  $y = 2x + 5$
  - 4)  $y = 2x - 5$
- 9 Line  $\ell$  passes through the point  $(5, 3)$  and is parallel to line  $k$  whose equation is  $5x + y = 6$ . An equation of line  $\ell$  is
- 1)  $y = \frac{1}{5}x + 2$
  - 2)  $y = -5x + 28$
  - 3)  $y = \frac{1}{5}x - 2$
  - 4)  $y = -5x - 28$
- 10 Which line is parallel to the line whose equation is  $4x + 3y = 7$  and also passes through the point  $(-5, 2)$ ?
- 1)  $4x + 3y = -26$
  - 2)  $4x + 3y = -14$
  - 3)  $3x + 4y = -7$
  - 4)  $3x + 4y = 14$

- 11 What is the equation of a line that passes through the point  $(-3, -11)$  and is parallel to the line whose equation is  $2x - y = 4$ ?
- 1)  $y = 2x + 5$
  - 2)  $y = 2x - 5$
  - 3)  $y = \frac{1}{2}x + \frac{25}{2}$
  - 4)  $y = -\frac{1}{2}x - \frac{25}{2}$
- 12 What is an equation of the line that passes through the point  $(7, 3)$  and is parallel to the line  $4x + 2y = 10$ ?
- 1)  $y = \frac{1}{2}x - \frac{1}{2}$
  - 2)  $y = -\frac{1}{2}x + \frac{13}{2}$
  - 3)  $y = 2x - 11$
  - 4)  $y = -2x + 17$
- 13 Which equation represents the line parallel to the line whose equation is  $4x + 2y = 14$  and passing through the point  $(2, 2)$ ?
- 1)  $y = -2x$
  - 2)  $y = -2x + 6$
  - 3)  $y = \frac{1}{2}x$
  - 4)  $y = \frac{1}{2}x + 1$
- 14 What is the equation of a line passing through the point  $(6, 1)$  and parallel to the line whose equation is  $3x = 2y + 4$ ?
- 1)  $y = -\frac{2}{3}x + 5$
  - 2)  $y = -\frac{2}{3}x - 3$
  - 3)  $y = \frac{3}{2}x - 8$
  - 4)  $y = \frac{3}{2}x - 5$
- 15 An equation of the line that passes through  $(2, -1)$  and is parallel to the line  $2y + 3x = 8$  is
- 1)  $y = \frac{3}{2}x - 4$
  - 2)  $y = \frac{3}{2}x + 4$
  - 3)  $y = -\frac{3}{2}x - 2$
  - 4)  $y = -\frac{3}{2}x + 2$
- 16 What is the equation of a line passing through the point  $(4, -1)$  and parallel to the line whose equation is  $2y - x = 8$ ?
- 1)  $y = \frac{1}{2}x - 3$
  - 2)  $y = \frac{1}{2}x - 1$
  - 3)  $y = -2x + 7$
  - 4)  $y = -2x + 2$
- 17 Which equation represents a line that passes through the point  $(-2, 6)$  and is parallel to the line whose equation is  $3x - 4y = 6$ ?
- 1)  $3x + 4y = 18$
  - 2)  $4x + 3y = 10$
  - 3)  $-3x + 4y = 30$
  - 4)  $-4x + 3y = 26$
- 18 Write an equation of a line that is parallel to the line whose equation is  $3y = x + 6$  and that passes through the point  $(-3, 4)$ .
- 19 Find an equation of the line passing through the point  $(5, 4)$  and parallel to the line whose equation is  $2x + y = 3$ .
- 20 Write an equation of the line that passes through the point  $(6, -5)$  and is parallel to the line whose equation is  $2x - 3y = 11$ .

**G.GPE.B.5: Parallel and Perpendicular Lines 3a**  
**Answer Section**

1 ANS: 2 REF: 081420ge

2 ANS: 1

$$m = -\frac{2}{3} \quad 1 = \left(-\frac{2}{3}\right)6 + b$$

$$1 = -4 + b$$

$$5 = b$$

REF: 081510geo

3 ANS: 3

$$y = mx + b$$

$$-1 = 2(2) + b$$

$$-5 = b$$

REF: 011224ge

4 ANS: 4

$$y = mx + b$$

$$3 = \frac{3}{2}(-2) + b$$

$$3 = -3 + b$$

$$6 = b$$

REF: 011114ge

5 ANS: 1

$$m = \frac{3}{2} \quad y = mx + b$$

$$2 = \frac{3}{2}(1) + b$$

$$\frac{1}{2} = b$$

REF: 081217ge

6 ANS: 3

$$y = mx + b$$

$$2 = \frac{1}{2}(-2) + b$$

$$3 = b$$

REF: 011701geo

7 ANS: 4

$$\frac{2}{3}(x-4) = y-5$$

$$2x-8 = 3y-15$$

$$7 = 3y-2x$$

REF: 061528ge

8 ANS: 3

$$m = \frac{-A}{B} = \frac{-4}{-2} = 2 \quad y = mx + b$$

$$1 = 2(-2) + b$$

$$1 = -4 + b$$

$$5 = b$$

REF: 081509ge

9 ANS: 2

$$m = \frac{-A}{B} = \frac{-5}{1} = -5 \quad y = mx + b$$

$$3 = -5(5) + b$$

$$28 = b$$

REF: 011410ge

10 ANS: 2

The slope of a line in standard form is  $\frac{-A}{B}$ , so the slope of this line is  $\frac{-4}{3}$ . A parallel line would also have a slope of  $\frac{-4}{3}$ . Since the answers are in standard form, use the point-slope formula.

$$y - 2 = -\frac{4}{3}(x + 5)$$

$$3y - 6 = -4x - 20$$

$$4x + 3y = -14$$

REF: 061123ge

11 ANS: 2

The slope of a line in standard form is  $-\frac{A}{B}$ , so the slope of this line is  $\frac{-2}{-1} = 2$ . A parallel line would also have a slope of 2. Since the answers are in slope intercept form, find the y-intercept:

$$y = mx + b$$

$$-11 = 2(-3) + b$$

$$-5 = b$$

REF: fall0812ge

12 ANS: 4

The slope of a line in standard form is  $-\frac{A}{B}$ , so the slope of this line is  $\frac{-4}{2} = -2$ . A parallel line would also have a slope of  $-2$ . Since the answers are in slope intercept form, find the  $y$ -intercept:  $y = mx + b$

$$3 = -2(7) + b$$

$$17 = b$$

REF: 081010ge

13 ANS: 2

$$m = \frac{-A}{B} = \frac{-4}{2} = -2 \quad y = mx + b$$

$$2 = -2(2) + b$$

$$6 = b$$

REF: 081112ge

14 ANS: 3

$$2y = 3x - 4. \quad 1 = \frac{3}{2}(6) + b$$

$$y = \frac{3}{2}x - 2 \quad 1 = 9 + b$$

$$-8 = b$$

REF: 061316ge

15 ANS: 4

$$m = \frac{-A}{B} = \frac{-3}{2}. \quad y = mx + b$$

$$-1 = \left(\frac{-3}{2}\right)(2) + b$$

$$-1 = -3 + b$$

$$2 = b$$

REF: 061226ge

16 ANS: 1

$$m = \frac{-A}{B} = \frac{1}{2} \quad -1 = \frac{1}{2}(4) + b$$

$$-1 = 2 + b$$

$$-3 = b$$

REF: 061420ge

17 ANS: 3

$$m = \frac{-A}{B} = \frac{-3}{-4} = \frac{3}{4} \quad 6 = \frac{3}{4}(-2) + b \quad y = \frac{3}{4}x + \frac{15}{2}$$

$$\frac{12}{2} = \frac{-3}{2} + b \quad 4y = 3x + 30$$

$$-3x + 4y = 30$$

$$\frac{15}{2} = b$$

REF: 011620ge

18 ANS:

$$m = \frac{1}{3} \quad 4 = \frac{1}{3}(-3) + b \quad y = \frac{1}{3}x + 5$$

$$4 = -1 + b$$

$$5 = b$$

REF: 011532ge

19 ANS:

$$y = -2x + 14. \quad \text{The slope of } 2x + y = 3 \text{ is } \frac{-A}{B} = \frac{-2}{1} = -2. \quad y = mx + b$$

$$4 = (-2)(5) + b$$

$$b = 14$$

REF: 060931ge

20 ANS:

$$y = \frac{2}{3}x - 9. \quad \text{The slope of } 2x - 3y = 11 \text{ is } \frac{-A}{B} = \frac{-2}{-3} = \frac{2}{3}. \quad -5 = \left(\frac{2}{3}\right)(6) + b$$

$$-5 = 4 + b$$

$$b = -9$$

REF: 080931ge